

**REMARKS**

This Response is in reply to the Office Action mailed on April 24, 2006. Claims 1-9 are pending and claims 1, 3, and 4 have been amended herein. Support for the amendment to claim 1 can be found on page 13, lines 8-10 of the specification. No new matter has been added. Entry and consideration of the amendments and following remarks is respectfully requested.

**Priority**

It is not clear to Applicant's representative why Examiner included the section on priority in the pending office action. The present application does not claim priority to any application under 35 U.S.C. § 119(e). This application is a national stage application of PCT/IB2003/006442 filed December 23, 2003 and claims the benefit of priority from Spanish patent Application No. P-200300003 filed January 2, 2003. The claim of priority is clearly set forth in both the declaration and the letter re priority submitted on June 15, 2005 along with the filing of the present application. It is believed that no specific reference is required in the specification for claims of foreign priority. Accordingly, no amendment is made to the first sentence of the specification at this time.

**Rejections under 35 U.S.C. § 103(a)**

Claims 1, 6, and 7 stand rejected as unpatentable over U.S. Patent No. 5,469,369 to Rose-Pehrsson et al. (hereinafter "Rose-Pehrsson") in view of U.S. Patent No. 4,423,407 to Zuckerman (hereinafter "Zuckerman"). Claims 2 and 3 stand rejected as unpatentable over Rose-Pehrsson in view of Zuckerman, and further in view of the Llobet et al. publication (hereinafter "Llobet"). Claims 4 and 5 stand rejected as unpatentable over Rose-Pehrsson in view of Zuckerman and

Llobet, and further in view of U.S. Patent No. 5,959,191 to Lewis et al (hereinafter "Lewis"). Claim 8 stands rejected as unpatentable over Rose-Pehrsson in view of Zuckerman, and further in view of U.S. Patent No. 6,679,097 to Kurokawa et al. (hereinafter "Kurokawa"). Claim 9 stands rejected as unpatentable over Rose-Pehrsson in view of Zuckerman, and further in view of the Visser et al. publication (hereinafter "Visser"). The rejections are respectfully traversed.

Examiner uses Rose-Pehrsson as the primary reference in rejecting independent claim 1 under 35 U.S.C. § 103(a), positing that the reference teaches all the limitations of the claimed invention except for sensors based on semi-conductor-type metal oxides that work in the absence of oxygen (pending office action, p. 7). Examiner relies on Zuckerman to teach the missing limitation. Applicant respectfully disagrees, and will show that other limitations in the claim are not taught by Rose-Pehrsson, nor by any of the secondary references cited by the Examiner. This is especially true in view of the current amendment to claim 1, which more clearly sets forth the claimed invention. Furthermore, it is Applicant's contention that Zuckerman does not disclose the limitation attributed to it by the Examiner. Finally, assuming *arguendo* that Zuckerman does teach the missing limitation, it is Applicant's position that it is improper to combine the teachings of Rose-Pehrsson and Zuckerman on account of the incompatibility of their teachings.

Briefly, in view the current amendment to claim 1, the claim now recites an analyzing system for the detection of reducing and oxidizing gases in a carrier gas which comprises a plurality of detecting means, calibrating means, and means for processing and control of acquisition and data recognition. The gas-detection means are sensors based on semiconductor-type metal oxides that work in the absence of oxygen. The system also includes

means for connecting the carrier gas to a measuring chamber which contains the sensors. The means of processing and control include a system of real-time recognition of the gases, which provides a diagram with delimited decision zones, in which the measurements taken on the carrier gas are situated and identified. And finally, the system implements calibrations in an automated way that is transparent to a user/operator of the system.

As just mentioned, the calibration system of the present invention is implemented in an automated manner that is transparent to the user of the system. This is possible on account of the operation of the calibration process. The calibration process of the present invention consists of obtaining matrices based upon the measurements of conductance received as sensor responses. The matrices are then auto-scaled, and a lineal combination thereof is found using the Principal Component Analysis (PCA) technique or a principal component extraction to convert N-dimension space (where N is the number of sensors) into a 2-dimensional space. A number of zones are then defined on the two dimensional space depending upon the position of the points obtained by the calibration responses. This process may be repeated periodically, allowing for an automated recalibration of the system. Accordingly, the method employed by the claimed invention need not be supervised since the clusters of data points are formed naturally.

In contradistinction, Rose-Pehrsson teaches forcing the desired clusters to appear (Rose-Pehrsson col. 15, lines 13-18). The learning process of Rose-Pehrsson, therefore, must be supervised. There can be no automated recalibration of the system. This function is not taught or suggested by any of the references. On account of this distinction, the claimed invention is a more robust system than the prior art systems. This distinction alone renders the claimed invention patentable over the prior art.

However, other distinctions between the claimed invention and Rose-Pehrsson also exist. The claimed invention requires that the processing means and control means include a system of real-time recognition of the gases. Examiner cites col. 26, lines 53-61 to teach this limitation. While the cited passage uses the terms "immediately" and "real-time", in reality, the alarm signal of Rose-Pehrsson cannot be in real-time. Although the sensor signal can begin to be *processed* immediately or in real-time, by the time the processing is complete, the sample of gas relating to the processed data has since been passed through the concentrators and released. This is due to the use of two pre-concentrators by Rose-Pehrsson (col. 5, lines 1-12). In contrast, the present invention uses an algorithm which carries out an auto-scaling of the vector of conductance variation, a projection of the auto-scaled vector onto the space defined in the calibration process, and finally the determination of the determined zone. The calculation is extremely fast (order of ms).

It should be noted that, although Rose-Pehrsson mentions the possibility of exposing the sensors in the array directly to sample air, it also teaches away from this possibility by claiming that the sensitivity and selectivity of the sensor array would be lower (col. 5, lines 2-12). Accordingly, Rose-Pehrsson also fails to teach this limitation which is not taught or suggested by the other prior art references.

The Zuckerman reference is relied upon by the Examiner to teach the claimed limitation that the sensors based on semi-conductor-type metal oxides that work in the absence of oxygen. Applicant respectfully disagrees. The sensor of Zuckerman was a derivative of and an improvement on the semi-conductor-type metal oxide sensors that were already known in the art. These sensors were only known at the time the present invention was made to work in the

presence of oxygen. Examiner admits as much, stating that Zuckerman proposes the use of the sensor in an air environment. However, Examiner then attempts to extract an understanding from a general statement in Zuckerman that the sensor is capable of being used in environments that do not include oxygen. The statement made by Zuckerman (as quoted by the Examiner) is that the chlorine sensor does not respond adversely to oxygen. The plain meaning of this statement is clear. The oxygen in the environment does not adversely affect the sensors. Hence, oxygen is present during the use of the sensors. However, Examiner insists on mining this statement for teachings that are just not present. There is absolutely no mention of the use of the sensor of Zuckerman in an environment that is lacking oxygen. Examiner improperly uses hindsight to elicit this disclosure in order to reject the claimed invention. For at least this reason the combination of Rose-Pehrsson and Zuckerman do not render the claimed invention unpatentable.

Assuming, *arguendo*, that Rose-Pehrsson and Zuckerman in combination do teach all the elements of the claimed invention, Applicant believes that the combination of these references is improper. There is no motivation or suggestion in either reference to combine the two. In fact, the teachings of the two references are incompatible. The Rose-Pehrsson system is dependent upon the use of SAW sensors. The system would not be viable if the SAW sensors were replaced with semiconductor sensors that rely on electrical conductivity of the sensors. Furthermore, the system of Rose-Pehrsson uses direct sampling to the sensors using an air sample. Consequently, it would be impossible to adapt the Zuckerman sensor to the system of Rose-Pehrsson.

Accordingly, none of the references cited by the Examiner teach or suggest, either alone or in combination, the claimed invention as recited in claim 1. In view of the remarks presented above, it is respectfully submitted that independent claim 1 is patentable over the cited references. Furthermore, for at least the reason of their dependence, either directly or indirectly, from claim 1, claims 2-9 are also patentable. Examiner is respectfully requested to withdraw the rejections and allow the application.

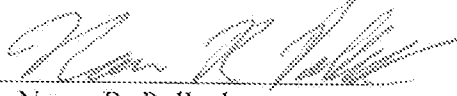
**CONCLUSION**

In view of the amendments to claims 1, 3, and 4 made herein and the arguments presented above, it is submitted that the Examiner's rejections have been overcome and should be withdrawn. The application should now be in condition for allowance.

Should any changes to the claims and/or specification be deemed necessary to place the application in condition for allowance, the Examiner is respectfully requested to contact the undersigned to discuss the same.

This Response is being filed with a petition for a three-month extension of time and the required fee. In the event that any other extensions and/or fees are required for the entry of this Amendment, the Patent and Trademark Office is specifically authorized to charge such fee to Deposit Account No. 23-2820 in the name of Wolf, Block, Schorr & Solis-Cohen LLP. An early and favorable action on the merits is earnestly solicited.

Respectfully submitted,  
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LLP.

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